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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/914,244	08/19/97	LEGENDRE	022701627

IM61/1102
BURNS DOANE SWECKER & MATHIS
P O BOX 1404
ALEXANDRIA VA 22313-1404

EXAMINER	
BULLOCK, I	
ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 11/02/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/914,244

Applicant(s)

Legendre, et al.

Examiner

In Suk Bullock

Group Art Unit

1764



☒ Responsive to communication(s) filed on May 28, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-23 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-23 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☒ received in Application No. (Series Code/Serial Number) 08/501,872

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Supplemental Office Action

Applicant's preliminary amendment filed 05/28/98 crossed with the office action mailed 05/27/98 (Paper No. 17) necessitating a supplemental office action. The time period for response to this present supplemental office action will begin with the mailing date of this office action.

Claims Pending

Newly added claims 22 and 23 have been entered and considered. Thus, claims 1-23 are pending in this present application.

Claim Rejections - 35 USC § 112

Claims 16-21 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a specific surface area in the range of 350-370 m²/g, does not reasonably provide enablement for a specific surface area which is **lower than** 350 m²/g. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Claims 16-21 recite a limitation "wherein the catalyst has a specific surface of up to about 360 m²/g" but the specification on page 8, lines 18-19 discloses a specific surface of "360 (+/- 10) m²/g". Thus, the specification is enabling only for a specific surface in the range of 350-370 m²/g.

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Claim Rejections - 35 USC § 112

Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-3 and 11-15 recite the phrase “effective amount” which renders claims 1-21 indefinite because it is not known what “effect” is desired.

Claim 23, lines 2 and 3 recite “Nm” which is indefinite because it is not known if it is a typographical error and applicant meant “nm” (i.e., nanometer) or if it means something else. In the event that “Nm” is a typographical error and means “nm”, then the claim does not commensurate in scope with the disclosure and claim 23 is further rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for “pore volume of pores of **diameter greater than 0.1 μm** of 18.5 ml/100g of alumina and pore volume of pores of **diameter greater than 1 μm** of 15.5 ml/100g of alumina”, does not reasonably provide enablement for pore volume of pores of diameter **less than 0.1 μm** of 18.5 ml/100g of alumina and pore volume of pores of diameter **less than 1 μm** of 15.5 ml/100g of alumina. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with the claim. Claim 23 recites a limitation of “pore volume of pores of diameter greater than 0.1 Nm of 18.5 ml/100g and pore volume of pores of diameter greater than 1 Nm of 15.5 ml/100g” but the specification on page 8, lines 19-22 discloses “pore volume of pores of diameter greater than 0.1 μm : 18.5 ml/100g of alumina and

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pore volume of pores of diameter greater than 1 μm : 15.5 ml/100g of alumina". Thus, the claim does not commensurate in scope with the disclosure. Additionally, it is suggested that the phrase "of alumina" be inserted after each recitation of pore volume.

Claim Rejections - 35 USC § 102

Claims 1-5 and 13-15 rejected under 35 U.S.C. § 102(b) as being anticipated by Goodboy (U.S. 4,364,858) are hereby withdrawn in view of the Remarks filed 05/28/98.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

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art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The factual inquiries set forth in *Graham v. John Deere Co.*, 148 USPQ 459, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or unobviousness.

Claims 1-23 are rejected under 35 U.S.C. § 103 as being unpatentable over Goodboy (U.S. 4,364,858) and Dupin et al. (U.S. 5,244,648) or Carithers (U.S. 3,856,708).

The reference to Goodboy teaches a Claus catalyst in the form of activated alumina containing sodium oxide in an amount greater than 0.1 wt% of the catalyst, preferably between 0.1 and 2.5 wt% (col. 3, lines 54-59). The catalyst has a surface area greater than 100 m²/g, preferably greater than 300 m²/g (col. 3, lines 64-68). The catalyst may also be used as a catalyst base to which additive compounds such as molybdenum, cobalt, nickel, calcium and others known to those skilled in the art may be added to enhance the specific properties of the catalyst (col. 6, lines 62-68). Goodboy teaches that the catalyst of the invention has increased

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resistance to sulfate poisoning and higher catalytic activity with respect to compounds such as H_2S , SO_2 , COS and CS_2 . In addition, Goodboy teaches that organic sulfur compounds are removed by hydrolysis (col. 1, lines 32-68).

The differences between Goodboy and the claimed invention are: (1) Goodboy does not teach any of the materials listed in claim 6 such as cellulose and (2) Goodboy does not teach diameter size of the beads and pore volumes.

The reference to Dupin et al. teach active alumina agglomerates comprising sodium (col. 3, lines 18-49), cellulose (col. 3, lines 55-61), alkaline earth metal salts (col. 4, lines 42-64) and silica (col. 8, lines 39-42). Agglomeration of the catalyst is carried out known manners such as pelletizing, extrusion, and shaping into beads (col. 3, lines 50-54). The alumina agglomerates have variety of applications such as catalysts or catalyst supports (col. 8, lines 37-39 and col. 8, line 64 thru col. 9, line 8). Depending upon the use of the alumina agglomerates, various pore sizes may be produced ranging in sizes less than 100 angstrom to greater than 10,000 angstrom (col. 8, lines 54-63).

Carithers teaches an activated alumina catalyst support having a macroporous structure with a total pore volume of at least about 0.7 ml/g, wherein a major portion of the total pore volume from pores larger than 700 angstrom is contributed by pores which are larger than 3,000 angstrom (col. 2, lines 45-67). The activated alumina is mixed with a filler material such as cellulose to facilitate formation of desirable macropores (col. 3, lines 47-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified

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the process of Goodboy and add cellulose as taught by Dupin et al. and Carithers because cellulose is a known pore forming agent and desired pore sizes may be obtained.

With respect to the claimed diameter size of the beads, Goodboy teaches that the size of the catalysts may be adapted to particular situation, i.e., fixed or mobile bed or fluid bed or with aerial suspension (col. 7, lines 1-4).

With respect to the claimed limitation wherein the catalyst has a specific surface of up to about $360 \text{ m}^2/\text{g}$, Goodboy teaches a catalyst having a surface area greater than $100 \text{ m}^2/\text{g}$ (col. 3, lines 65-68) which encompasses the claimed surface area. Thus, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see In re Malagari, 182 USPQ 549 (CCPA 1974).

In view of the foregoing, the claims have failed to patentably distinguish over the applied art.

Response to Arguments

Applicant's arguments filed 05/28/98 have been fully considered but they are not persuasive.

Arguments directed to 35 USC § 102(b) rejection is moot in view of the withdrawal of the rejection. The following is in response to arguments directed to 35 USC § 103 rejection.

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Applicant argues that “Goodboy provides no recognition that the Na_2O content would be effective in providing improved CS_2 conversion rates.” The examiner respectfully disagrees and directs applicant’s attention to col. 1, lines 8-13, which explicitly states, “. . . improved Claus catalyst made from activated alumina and sodium oxide . . . the catalyst possesses . . . higher catalytic activity with respect to compounds such as . . . CS_2 . . .” Thus, Goodboy does in fact recognize sodium oxide concentration is a result-effective variable and, thus, it would have been obvious to a skilled artisan to have optimized the concentration of sodium oxide. It is noted that Goodboy teaches catalytic activity with respect to compounds other than CS_2 , i.e., H_2S , SO_2 and COS (col. 1, lines 11-12). A skilled artisan recognizes that a catalyst is unpredictable and would not function with same results for all processes. Thus, a skilled artisan would recognize that the amount of sodium oxide required for optimum results would differ for each of the compounds listed by Goodboy in col. 1, lines 11-12. Therefore, depending on the process for which the catalyst is to be employed, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum concentration of sodium oxide because sodium oxide is a recognized result-effective parameter. In re Antonie, 195 USPQ 6 (CCPA 1977).

The Nedež Declaration submitted has been carefully studied and considered. However, it is not convincing for the reasons stated above. Additionally, applicant argues that “Goodboy fails to disclose any examples falling within the claimed range for the Na_2O content.” The disclosure of the reference is not limited to its preferred embodiments but must be evaluated for what they

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fairly teach one of ordinary skill in the art. In re Boe, 148 USPQ 507 (CCPA 1966). As stated above, one of ordinary skill in the art would recognize that the amount of sodium oxide required for optimum results would differ for each of the compounds listed by Goodboy in col. 1, lines 11-12. A skilled artisan would reasonably expect that within the range of 0.1 wt% (1,000 ppm) to 2.5 wt.% (25,000 ppm) sodium oxide concentration taught by Goodboy an optimum concentration for catalytic activity with respect to CS₂, H₂S, SO₂ and COS would differ for each. Recognizing that concentration of sodium oxide is a result-effective parameter, a skilled artisan could have determined the optimum concentration of sodium oxide through routine experimentation.

In view of the foregoing, the claims have failed to patentably distinguish over the applied art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is (703) 308-3795. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached on (703) 305-6118. The fax phone number for this Group is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

J. Bullock
I.B.
October 29, 1998

Glenn Caldarola
GLENN CALDAROLA
SUPERVISORY PATENT EXAMINER